

Trends in Extending Information Services for Visually Challenged Library Users

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:: Abstract ::

Attempt is made to depict the use of various assistive technologies by the visually challenged users of the Mysore University Library. Responses have been sought from the visually challenged faculty, researchers and students through formal interview as to the extent of use and familiarity with the hardware and software products installed to access information resources at the Learning Resource Centre of the library. The study also focuses on the problems faced by the visually challenged users while accessing information resources. The study also focuses on the need for orientation programmes or the training programmes for effectively handling hardware and software packages made available to the users.

Keywords: Visually Challenged library users, Assistive Technology for blind, Library Facilities for Blind

Introduction:

"For most people, Technology makes things easier. However, for people with Disabilities, Technology makes things possible!" by Mary Pat Radabaugh

The University of Mysore nurtured its library system with rich document collections since its establishment in 1916. More than one million volumes have been made available for its patrons through 26 libraries including the main University Library and those belonging to its constituent colleges, institutions and post-graduate departments. University Library has set up Digital Information Resource Centre (DIRC) with 200 computers in the library for facilitating access to e-books, e-journals, e-theses, Institutional Repositories of national research institutions of high repute.

The University of Mysore has established Learning Resource Centre FOR Visually Challenged and also taken up University Grants Commission's UPE Holistic Project "Centre for Education of Visually Challenged – DRUSHTEE" to provide innovative teaching technique

and philosophy that continues to have far-reaching effects on the lives of visually challenged students. Low vision or partially sighted students can now read for longer hours without tiredness. It is a unique computer reading facility for visually challenged with a congenial classroom environment. The Learning Resource Centre has the facility to read printed books and also print Braille books. Some of the prominent hardware and software facilities, popularly called "Assistive Technology" meant for visually challenged students and faculty are explained in this paper.

Assistive Technology means any item, piece of equipment or product system that is used to increase, maintain or monitor functional capacities of individuals with disabilities. Assistive Technology consists of devices or services that help people to achieve greater independence and to enhance the quality of their lives.

Visual impairment is actually the effect of a functional loss of vision, before the eye disorder itself. Total blindness is the inability to distinguish light from dark, or the total inability to see. Further, low vision or partial blindness is a severe reduction in vision that can't be corrected with standard glasses or contact lenses and reduces a person's ability to function at certain or all tasks.

The major Library or Reading facilities for visually challenged students in Mysore are attached to the following institutions.

1. University of Mysore, main Post-graduate Library
2. Kuvempu Institute of Kannada Studies.
3. College of Fine Arts.
4. Helen A. Keller Institute for Human Disabilities.
5. JSS Polytechnic for the Differently Abled.
6. Ranga Rao and Sons Memorial School for Blind.

Objectives and Methodology:

The objectives of the study are to know the extent of use of various hardware and software by the visually challenged users of Mysore University Library ; to understand the extent of familiarity of these hardware and software for accessing information sources, both print and electronic sources of information ; to know various problems faced by the physically challenged users while accessing information using technology ;and to capture the need of training for effective use of the assistive technologies.

A survey has been conducted covering the library facilities and the availability of Assistive Technology in Mysore University Library. Further, formal interview method has been adopted for data collection from the users who rely upon the Assistive Technology available at the University of Mysore. The authors have also adopted observation

method to record the facilities made available here. The users who visit the Mysore University Library have been interviewed.

Assistive Technologies:

SARA-Stand Alone Text Reading Machine:

A simple text reading machine for those who are not comfortable with computers but still need to read printed books and journal articles. All that the user needs to do is simply place the text on the platform and SARA instantly reads out the contents. The speed of reading and voice can be increased or decreased according to the convenience, even magnifies the text, object, diagram, picture to be viewed. The accent can also be selected while using SARA.

SARA Scanning and Reading Appliance is easy-to-use solution for reading a wide variety of printed material, including books, mail, newspapers, magazines, and so much more. SARA uses the latest in advanced optical character recognition technology to scan text and then read it aloud in crisp, clear speech.. SARA automatically stores and remembers the contents of over 15 lakh pages as it has a hard disk of 60GB.

SARA can be operated without any experience or training nor any computer knowledge. Just place your book or document on the scanning area, and press the scan button. SARA automatically scans and recognizes the text and reads it to you.

Prisma Magnifier:

The Prisma is a full color reading device that offers the user a flexible way to read, write and look at photographs and other things that need to be magnified. It offers variable magnification and a full color, magnified image is displayed on a standard television.

A stylish, full color magnifier, the Prisma connects to a standard TV and means you can magnify text and even photos by up to 52 times! The Prisma is easy to use and its simple controls mean you can view text and photographs in full color or enhanced reading modes. The unit folds to a mere 60mm and only weighs 1kg making it ideal for transportation.

Prisma is useful to persons suffering from low vision due to retinitis pigment's, macula degeneration or other eye problems causing the vision to be substantially lowered needing high magnification at close distances to read, write or view objects/pictures.

PAIF: Picture in a flash (Graphic Embosser):

Picture in a flash enable the automatic production of tactile graphic material using a heat sensitive paper, known as Capsule Paper. It is a device known generally as Tactile Image Maker, which produces high quality tactile graphics suitable for blind. It is popularly known as Graphic Embosser.

JAWS Pro Talking Software:

A JAW (Job Access with Speech) converts your computer into a talking computer. It reads out all the matter that is on the computer's screen through your computer's speakers/ headphones, thus enabling a visually challenged person to use the computer independently and work on all MS Windows applications.

JAWS Software offers comprehensive screen reading capable for Windows. It converts normal PC into a talking PC to enable the blind to operate computers independently including Internet access.

Magic Large Print Keyboard:

Magic Large Print Keyboards have been designed specifically for those with conditions that cause visual impairment or low vision

Zoom-Ex Instant Reader:

Place the book under zoom-ex and press one keystroke, within 5 seconds, one can read the magnified text or listen to it reading for visually challenged. Zoom Twix is a twin function reading device for near reading of documents and distant viewing of blackboards/ whiteboards in classrooms or boardrooms.

Features:

In reading mode, it not only magnifies the text but also reads it out aloud instantly in a Clear Indian Voice and highlights each word as it is read.

- Automatic Page Orientation
- Make Large Print Books: You can print the entire magnified text and make large print books
- Its Motion Sensor Technology provides high speed conversion of Text to Digital Format @ 20 pages per minute.
- Create Talking Books: Scanned books can be instantly converted into audio files
- Allows reading of Tables and Financial Records

Plex Talk DAISY Readers and Recorders:

A pocket size DAISY Reader cum Recorder with full DAISY navigation features that converts text files, word documents and even voice recorder.

Angel Book Reader:

This has 4.5 GB capacity. Electronic format of journal articles or books can be loaded to Angel Reader and it will read out for the blind. There is also provision to listen to FM Radio. Further, the portable equipment can be used to record classroom lectures and group discussions.

Braille box high speed Braille Embosser v4:

High speed single sheet fed Braille printer and the Braille Box is a milestone for production braille embossers. With this 900 pages can be printed in 60 Minutes.

- 300 characters/second - fastest production embosser
- High capacity production - holding up to 400 cut sheet pages
- Automatic magazine format - hassle free book printing
- Noise canceling design
- 5 X globally renowned design award winner
- Multi-lingual voice speech feedback
- High Resolution Tactile Graphics

TOPAZ -XL HD Desktop Video Magnifier:

TOPAZ desktop video magnifiers make seeing type, handwriting, and small details easier than ever before. Just place a letter or picture on the moveable reading table, and adjust the magnification level and display colours that best suit your eyesight. The document gets displayed in super large size on the screen. Anything that fits on the reading table can be magnified.

The TOPAZ uses a true High Definition camera to produce the clearest, sharpest image and crispest text available. The sharp image allows the TOPAZ XL HD to offer the lowest magnification and widest field of view of any desktop video magnifier, so you can maximize the amount of information displayed on the screen - especially with a widescreen monitor. This reduces the need to move the reading table when reading text, looking at photo albums, or working on crafts and other projects. Many users will find they can display an entire page of text in high contrast and read comfortably without moving their document back and forth under the camera.

Refreshable Braille Displays:

A refreshable braille display or braille terminal is an electro-mechanical device for displaying braille characters, usually by means of round-tipped pins raised through holes in a flat surface. Blind computer users, who cannot use a normal computer monitor, use it to read text output. Speech synthesizers are also commonly used for the same task, and a blind user may switch between the two systems or use both at the same time depending on circumstances.

Refreshable Braille Displays use screen readers such as JAWS to activate the refreshable Braille cells and act as a tactile monitor that allows the user to navigate and read information in dynamic Braille. Ideal for those visually challenged who prefer to read the contents of the PC in Braille instead of the Standard QWERTY keyboard. It connects to any PC or laptop installed with JAWS software.

Kurzwel OCR Reading Software:

The software when combined with a flatbed scanner and PC convert into a reading machine. All one needs to do is to place the book or printed text face down on the scanner and once it is scanned the software converts it to readable format and speaks out aloud the contents. BONITA Portable Mouse Magnifier

Portable, full colour mouse magnifier that is the size of a computer mouse and connects directly to any TV or a monitor with video input, allowing you to read newspapers, magazines, letters, books, documents, bills and even medicine labels easily.

Analysis of Data:

Interview method has been adopted to get the responses from the 27 users of Learning Resource Centre of Mysore University Library. Responses have been captured in respect of the extent of the use of assistive technologies. The LRC Log book has also been referred to derive the data. The data thus obtained has been tabulated and interpreted to arrive at the findings of the study.

Table-1 Category-wise users of Learning Resource Centre

Sr. No.	Category of users	No of Users Visited During 2012-13	
		No of Users	No of Visits
1	Faculty	7 (25.921%)	34 (15.19%)
2	Research Scholars	5 (18.52%)	29 (12.94%)
3	Students	15 (55.55%)	161 (71.87%)
Total		27 (100%)	224 (100%)

Table 1 depicts the category-wise users of the Learning Resource Centre (LRC) for visually challenged users. Among the users of LRC, 25.92% are the faculty, 18.52% represents research scholars and 55.55% represents students community. Further, as regards the number of visits of the users during the past one year, (2012 – 13), the data clearly indicates that a large percentage of users of assistive technologies is represented by the category of visually challenged students which account for 55.55%. In fact a considerable number of users among the faculty representing 25.92% rely upon assistive technologies for accessing information resources.

Table-2. Gender-wise users of assistive technologies

Sr. No.	Category of users	Male	Female	Total
1	Faculty	04 (14.81%)	03 (11.11%)	7 (25.92%)
2	Research Scholars	05 (18.52%)	0 (00%)	5 (18.52%)
3	Students	12 (44.44%)	3 (11.11%)	15 (55.55%)
	Total	21 (77.78%)	6 (22.22%)	27 (100%)

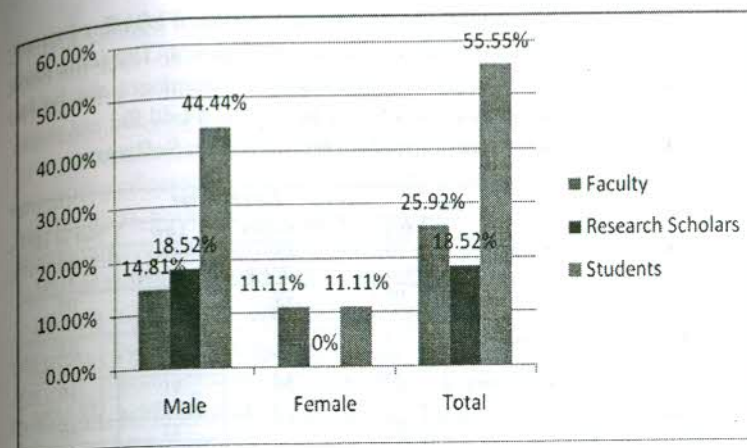


Table 2 projects gender – wise category of visually challenged users of assistive technologies. Among the users, 77.78% represents male users and 22.22% represents female users. Further, the data clearly indicates that there are considerable number of visually challenged faculty members among female users of technology which account for 42.85%.

Table-3 Extent of use of assistive technologies: Hardware

Sr. No.	Hardware	Extent of use			
		High	Moderate	Low	Not at all
1	Sara Book Reader	12 (44.44%)	12 (44.44%)	02 (7.41%)	01 (3.70%)
2	Angel Book Reader & Plex Talk, CD-Reader	12 (44.44%)	08 (29.63%)	05 (18.52%)	02 (7.41%)
3	Prisma, Zoomex, Topaz Magnifier, Bonita Mouse	16 (59.26%)	06 (22.22%)	03 (11.11%)	00 (00)
4	Braille printers-250Braille Box V-4	04 (14.81%)	04 (14.81%)	10 (37.04%)	09 (33.33%)

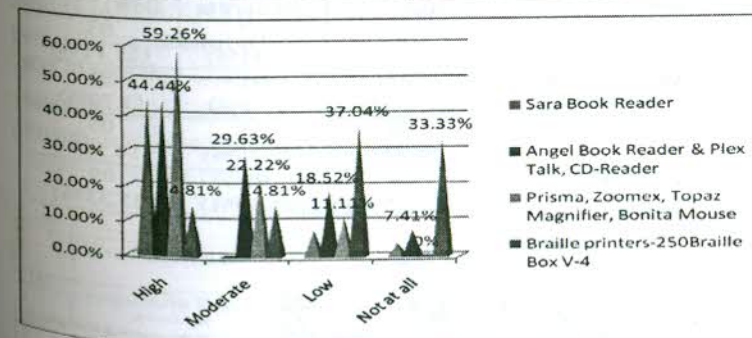
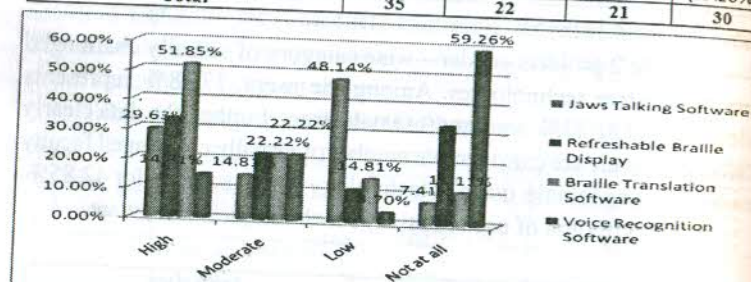


Table 3 depicts the extent of use of assistive technologies: hardware by the visually challenged users. The all the equipment are

being used to a higher extent except Braille printers. 37.04% of users state that the use of Braille printers is to a lower extent. The table also shows that the book readers and magnification equipment are being used to a higher extent which account for more than 44.44 %.

Table-4 Extent of use of assistive technologies: Software

Sr. No.	Software	Extent of use			
		High	Moderate	Low	Not at all
1	Jaws Talking Software	08 (29.63%)	04 (14.81%)	13 (48.14%)	02 (7.41%)
2	Refreshable Braille Display	09 (33.33%)	06 (22.22%)	03 (11.11%)	09 (33.33%)
3	Braille Translation Software	14 (51.85%)	06 (22.22%)	04 (14.81%)	03 (11.11%)
4	Voice Recognition Software	04 (14.81%)	06 (22.22%)	01 (3.70%)	16 (59.26%)
Total		35	22	21	30



Among the software used to access information resources (Table 4), the respondents feel that they are not well versed in using them and it implies the need of extensive training. Particularly the use of Jaws Talking Software, Refreshable Braille Display and Voice Recognition Software are used only to a limited extent.

Table-5 Degree of familiarity with the use of assistive technologies

Sr. No	Category of Users	Degree of Familiarity		
		High	Moderate	Low
1	Faculty	02 (7.41%)	02 (7.41%)	03 (11.11%)
2	Research Scholars	03 (11.11%)	01 (3.70%)	01 (3.70%)
3	Students	04 (14.81%)	06 (22.22%)	05 (18.52%)
Total		09 (33.33%)	09 (33.33%)	09 (33.33%)

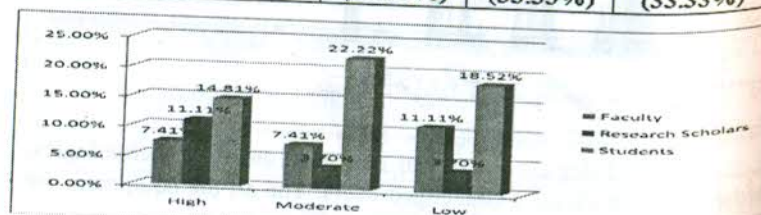


Table 5 shows the degree of familiarity with the assistive technologies. Among the respondents, 33.33% are familiar with the use of assistive technologies to the higher extent and an equal percentage of users are familiar only to a lower extent. It is this segment which needs greater concentration as far as training is concerned. Among the categories of respondents, more number of faculty and research scholars are familiar with the use of assistive technologies than the student community. A large segment of students are familiar only to a lower extent as far as the use of technology is concerned.

Table -6 Problems faced by the respondents in using technology

Sr No	Types of Problems	No of Respondents	Percentage
1	Inconvenient location of facilities	6	(22.22%)
2	Inconvenient Timings	16	(59.26%)
3	Lack of Facilities	6	(22.22%)
4	Lack of Guidance	2	(7.41%)
5	Lack of Knowledge Among Staff	17	(62.96%)

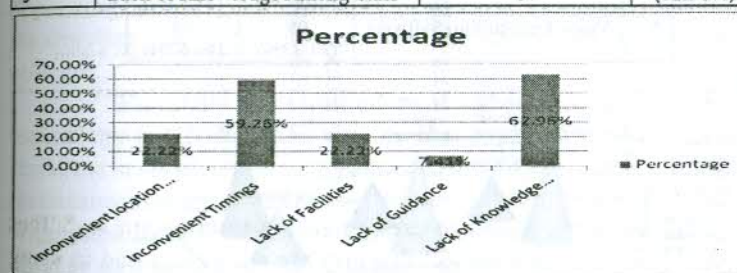


Table 6 furnishes various problems faced by the users in accessing information through technologies. A large percentage of respondents have expressed that the timings of LRC is inconvenient for the use, which account for 59.26%. They are also of the view that the staff of LCR lack sufficient knowledge in effectively using the hardware and software installed at the Learning Resource Centre. It is also important here to note that 22.2% of the respondents feel that the facilities cannot meet their expectations. Here, by facilities they mean scanners and book readers in sufficient quantity.

Table-7 Training requirement projected by the respondents: Hardware

Sr No	Technologies	No of Respondents	
		Yes	No
1	Sara Book Reader	11 (40.74%)	16 (59.26%)
2	Angel Book Reader & Plex Talk, CD-Reader	13 (48.15%)	14 (51.86%)
3	Prisma, Zoomex, Topaz Magnifier, Bonita Mouse	18 (66.67%)	09 (33.33%)
4	Braille printers-250 Braille Box V-4	23 (85.19%)	04 (14.81%)

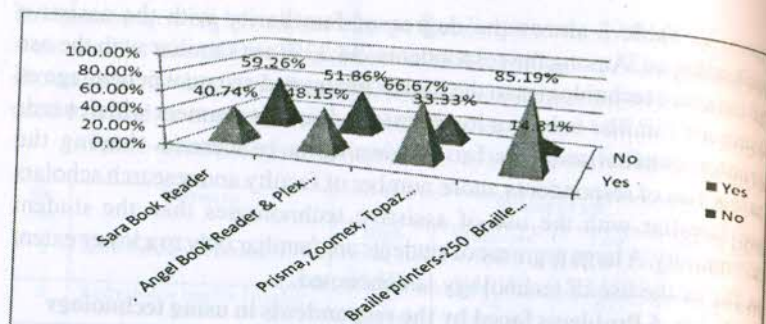


Table-8 Training requirement projected by the respondents: Software

Sr. No	Technologies	No of Respondents	
		Yes	No
1	Jaws Talking Software	18 (66.67%)	09 (33.33%)
2	Refreshable Braille Display	18 (66.67%)	09 (33.33%)
3	Voice Recognition Software	09 (33.33%)	18 (66.67%)

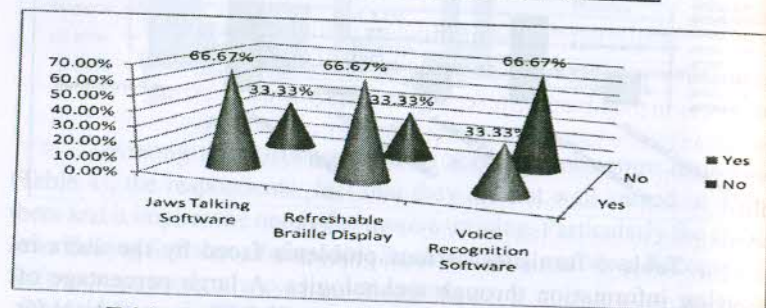


Table 7 depicts the training requirement projected by the respondents. It is clear from the table that a large number of users need training especially in effectively handling magnification equipment and Braille printers. Further, a considerable percentage of respondents ranging from 40% to 48% need training in effectively using book readers.

Among the software packages (Table 8), a large percentage of users have stated the need of training for effectively using Jaws and Braille Display. The use of voice recognition software is limited and the users have not expressed the need of training in large number.

Findings and Conclusion:

➤ All the category of library users 9faculty, researchers and students) avail the facility of Learning Resource Centre at large and are constantly bent upon in handling assistive technology for accessing information resources.

➤ All the visually challenged faculty members rely upon assistive technologies to access information resources in the library.

➤ A moderate percentage of visually challenged users are not fully versed in using the assistive technologies. They need training to a considerable extent for the effective use of technologies.

➤ A large percentage of users are familiar with the use of book readers and magnification equipment and use is also to the higher extent.

➤ Through Jaw Talking Software is an important tool for communication, many users representing all the categories is not completely familiar with the use.

➤ The use of Braille Printers is to a limited extent. The respondents feel that the staff of LRC lack skill in effectively handling technologies and extend support to the users.

➤ The respondents also opine that the timings of LRC is not conducive for longer hours of use of the centre. The timings need to be extended depending upon the convenience of the users. It is also recommended to decentralize LRC facilities and extend the same from the constituent colleges.

Especially in the institutions of higher learning, the Assistive technology is a boon to the visually challenged users of information resources in the library. Unlike yester years, the users access information instantaneously using assistive technology on par with the normal users with vision. The LRC's has to take into consideration the expectations of blind as well as the low vision students, so as to increase the number of admissions to the institution. Above all, adequate knowledge and skill in handling assistive technologies is an important factor amongst the staff upon which the delight of visually challenged users of Learning Resource Centers rests. The introduction of refreshable Braille display has helped the visually challenged students and faculty to read as well as, edit the text instantaneously. Constant training and orientation programmes for effective use of assistive technology is an important aspect for access to electronic and print information resources. Library and information centre is the appropriate place for installing assistive technologies as there is opportunity for accessing large number of print and electronic books and journals.

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Information Communication Technology and Libraries

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:: Abstract ::

Information communication technology plays an important role to raise the standard of teaching and research. Development in ICT have made significant impact on all spheres of human life. This paper highlights the concept of Information Communication Technology (ICT), ICT and Libraries, ICT based library activities, Role of Librarian in ICT Environment.

Introduction:

ICT plays an important role to raise the standard of teaching & research. Developments in ICT have made significant impact on all spheres of human life. The impact has been rather prominent in case of service activities such as banking, health, transportation, education & libraries. Benefits of use of ICT in services can be broadly explained in terms of 4Es, namely economy, ease, extension & efficiency. For the Libraries, ICTs has tremendously changed the management of resourced or House keeping operations as well as the way services is delivered. While general IT application tools and integrated library management systems are largely used in house keeping operation like acquisition, cataloguing, circulation control, serials control etc. Internet has been used extensively as a resource as well as a tool to deliver the library & information services.

Information Communication Technology:

The term ICT describes the use of computer-based technology and the Internet to make information and communication services available to a wide range of users. The term is used broadly to address a range of technologies, including telephones and emerging Technology devices. Central to these is the internet, which provides the mechanism for transporting data in a number of formats including text, images, sounds and videos. Information communication technology (ICT) may be defined as a combination of computer and telecommunication technology which makes possible new system and products to help people at work in education and other field also such as library. Information communication technology is the application of a wide verity of electronic technologies